

RESEARCH BUZZ



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Impact of September 11, 2001 (9/11) in the Emerging Market's Stock Volatility

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The catastrophic events of September 11, 2001 (hereafter referred as 9/11) had large scale effects on the global economy and the financial markets of the world. This study attempts to answer whether the terrorist attacks on 9/11 increased the time varying risk premium in the emerging markets. Though 9/11 primarily affected the major industrial countries, the emerging markets were also affected by the slowing external demand and a flight to quality in financial markets.¹ In the last fifteen to twenty years, investors, researchers, and policy makers have paid particular attention to the relatively rapid growth of emerging markets, and their sound performance over the period, with yields in some markets far exceeding those of developed markets.² In view of the current international status and of the interest in the emerging stock markets, the focus of this study is on the market volatility, risk premium and the persistence of shocks to volatility before and after the events of 9/11. The study particularly examines whether these markets provide an alternative avenue for investors seeking diversification and investors' potential returns over time to the changing risk patterns in these equity markets.

The term "Emerging Market" (EM) was first coined in 1981 by the International Finance Corporation, a member of the World Bank Group, to define an emerging or developing market economy, an economy with low-to-middle per capita income; such countries encompass approximately 80% of the global population, accounting for about 20% of the world's economies. EM refers to the countries or regions that have begun to industrialize, have adopted market capitalism, are opening to international trade and investment and are showing immense prospects as outstanding places to invest, offering the potential for a high return in a relatively short period of time.³ However, these regions have greater volatility and higher risk than the well-known developed markets and are often subject to unexpected political and economic upheavals. As a result, the value of stocks, bonds, and currencies changes drastically and abruptly.⁴

Many Latin American, Eastern European and Asian countries such as China, India, South Korea, Brazil, Argentina, Malaysia, Poland, Czech Republic, Hungary, and Russia are considered emerging markets. Several phenomena exemplify the future of emerging markets investing; these include the rise of China as a global manufacturing center, the growth of inter-Asian trade, the emergence of Russia as a major energy supplier, the enlargement of the European Union (with the inclusion of emerging economies of Central and Eastern Europe belonging to the former Soviet bloc), outsourcing and the wiring of the emerging world.⁵ A significant trait of the emerging market is the increase of both local and foreign investment (portfolio and direct); a growth in investment in a country often indicates that the country has been able to build confidence in the local economy.⁶ Moreover, foreign investment is a signal that the world has begun to take notice of the emerging market and when international capital flows are directed toward an emerging market, the injection of foreign currency into the local economy adds volume to the country's

stock market and long-term investment to the infrastructure.⁷

In the study, we use a GARCH (Generalized Autoregressive Conditional Heteroscedasticity) framework. Conditional implies a dependence on the observations of the immediate past, and autoregressive describes a feedback mechanism that incorporates past observations into the present. GARCH is a mechanism that includes past variances in the explanation of future variances.

For the study, we use five regional indices from Morgan Stanley Capital International (MSCI) in U.S. dollars (US\$). Indices representing the emerging markets are: Emerging Markets Latin America, Emerging Markets Europe, Emerging Markets Asia, Emerging Markets Far East and Emerging Markets Brazil, Russia, India and China (BRIC). All the data are for the period December 31, 1987 - July 7, 2006 for the emerging markets, and December 31, 1994 - July 7, 2006 for BRIC. The pre-9/11 sub-period encompasses December 31, 1987 - September 11, 2001 for the emerging markets (except BRIC), and December 31, 1994 - September 11, 2001 for BRIC. The post-9/11 sub-period encompasses September 12, 2001 - July 7, 2006. We further break down the post-9/11 periods into two sub-periods, one from September 12, 2001 to December 31, 2003 and the other from January 1, 2004 to July 7, 2006, in order to look at the immediate impact if any, after 9/11. Stock returns are defined as the first difference of the logarithm of the daily regional stock indices.

Findings and Conclusions

Using the daily returns for five regional indices, our results highlight several findings: a) the variance of emerging market returns appears to be decreasing over time; b) the correlations appear to have increased among emerging markets following the event of 9/11; c) we find lately that the correlation between EM Europe and BRIC has increased (however, we cannot firmly conclude if the increase in correlation is due to 9/11 or to globalization); d) 9/11 does affect emerging markets, in particular, holding short term assets does not provide investors with the reward they usually seek, but holding long term assets provides the risk premi-

ums demanded by investors; and finally e) for all the period, including sub-periods, we find the emerging markets show signs of significant volatility clustering, but shocks are not explosive throughout.

Are these issues so significant for the emerging market that they require the attention of policy makers and managers/institutional investors? Perhaps for the emerging markets, a clear picture for better insight is needed of the role played by different types of institutional investors in propagating shocks across asset markets, which is critical for understanding the extent to which asset prices are driven by factors unrelated to asset fundamentals. The deregulation and privatization programs in the emerging markets and capital mobility at times may increase the volatility of these markets. Policy makers are legitimately concerned because volatility of portfolio flows can have a destabilizing economic impact. The fear of policy makers stems from the fact that the flow of foreign funds is typically volatile, with positive inflows in a strong economy and negative outflows in a weak economy.

Over the past decade, the participation of foreign institutional investors in emerging debt and equity markets has increased dramatically, driven by the capital account liberalization and improved credit fundamentals in many emerging market countries, as well as by the relaxation of investment restrictions for institutional investors in mature markets. Policy makers, managers and institutional investors should take note of the present economic crisis of 2008;⁸ what began as a problem in a single sector in a single economy - the housing market in the United States - has now become a global problem not only overwhelming the developed market, but also affecting the emerging markets to a great extent. For the institutional investors with long-term investment objectives, the emerging markets still remain an outstanding place to invest. Emerging markets like Brazil, Russia, India and China are regarded as the economic powerhouse of the future.

Endnotes

1. Source: IMF, 2001b.
2. The expansion among high-income countries was projected to be stable during 2006, at about 2.5 percent, before picking up a bit in 2007. Growth in developing economies was projected to be 5.9 percent for 2005 and to remain above 5.5 percent for 2006 and 2007. Source: World Bank's *Global Economic Prospects 2006*, p. 1.
3. Net equity flows (foreign direct investment and portfolio flows) to the emerging markets have grown to roughly \$200 billion per year, providing an important source of capital for development. Source: *Global Development Finance 2005*, p. 14.
4. Over the past decade, emerging market bond markets have deepened markedly. The issuance of international securities by emerging market sovereigns and corporates has increased from a level of \$325 million in 1995 to roughly \$700 million in 2003. Meanwhile, the level of domestic bond issuance by emerging markets issuers over the same period has increased from \$1 trillion to \$2.4 trillion. Source: *Fitch Ratings 2004*.
5. The market capitalization of emerging market countries has more than doubled over the past decade, growing from less than \$2 trillion in 1995; it is set to exceed \$5 trillion in 2006. As a percentage of world market capitalization, emerging markets are now more than 12 percent and steadily growing. Source: *Standard & Poor's Global Stock Markets Fact book 2005*.
6. Emerging market equity funds absorbed \$20.3 billion of net inflows in 2005, five times more than the prior year and beating the previous record of \$14.4 billion of inflows from 2003. Source: *Emerging Portfolio Fund Research 2006*.
7. The share of foreign direct investment and portfolio equity in the finance mix of many developing countries has grown in recent years, a trend that enhances stability. Equity flows accounted for 80 percent of total external financing to developing nations during 1999–2003, compared with just 60 percent during 1993–1998. Source: *Global Development Finance 2005*, pp. 6-7.
8. IMF Predicts Slower World Growth Amid Serious Market Crisis - World Economic Outlook. April 9, 2008. In the face of this spreading financial crisis, recent IMF forecasts are for a marked slowdown in the U.S. and a more moderate, but still significant, slowdown in other industrial countries. World growth was predicted to slow to 3.7 percent in 2008, in wake of financial crisis, with the United States and other advanced economies leading the slowdown. Emerging market economies will not be immune from the global slowdown, either, but are likely to weather the storm better, but not insulated. The IMF's report states that other emerging and developing economies, including in Africa and Latin America, are also expected to maintain robust growth rates. Emerging and developing economies have been more resilient during the current market turmoil than in previous episodes, although countries that had relied heavily on short-term cross-border borrowing or have stronger trade ties with the United States remain vulnerable.

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Shifting Goalposts in the Mortgage Crisis

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The mortgage crisis preceded and was, arguably, a catalyst to the recession which began in December 2007. Since the beginning of the crisis, there have been various predictions on how deep the mortgage foreclosure crisis will go and how long it will last. However, as the recession has developed, major challenges still face the administration on how to stem foreclosures as well as to jumpstart home sales and the overall economy. Due to the existing credit crunch, many lenders are unable to provide loans to those willing to buy homes. Continuing home price declines, rising job losses, shaky consumer confidence and reduced access to credit are ensuring that a glut remains in the housing market. Recently released delinquency data show a continued rise in foreclosure inventory (see table), and, consistent with trends since mid 2005 (see chart), the subprime inventory continues to rise, although subprime starts declined in the last two quarters of 2008. Due to continuously evolving conditions, it is difficult to rely on past predictions and to make reliable forecasts on when the housing crisis may end. Potential homeowners are therefore adopting a wait-and-see attitude, hoping that the market may show signs of improvement.

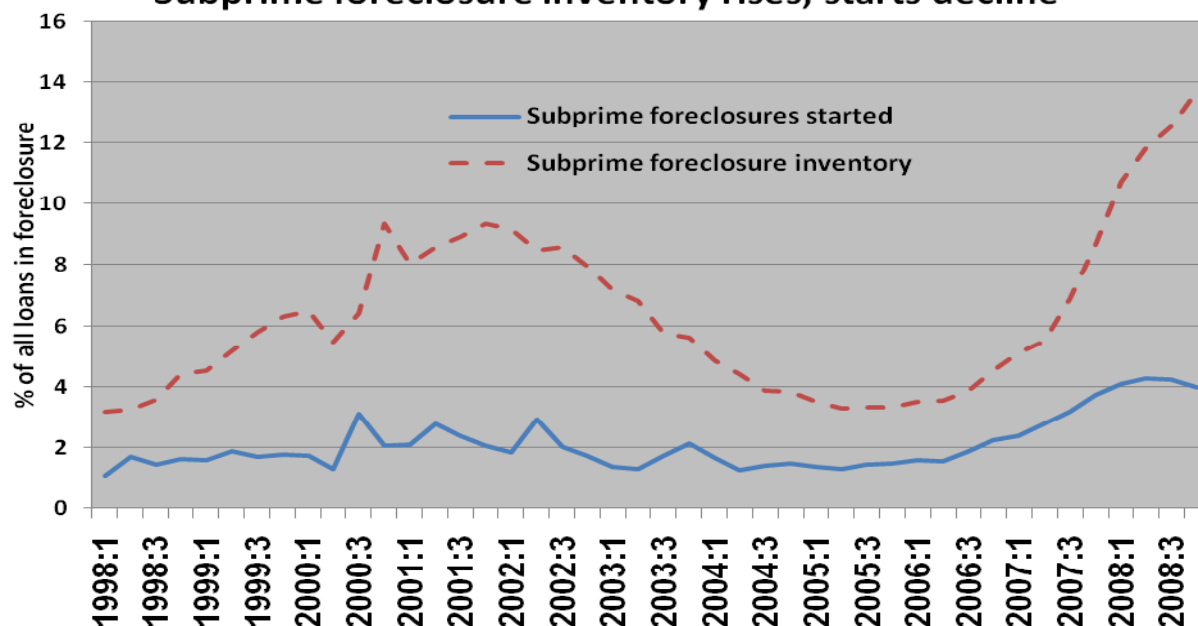
The Treasury Secretary Tim Geithner has indicated that the mortgage crisis was caused by “a long period of home price appreciation which encouraged borrowers, lenders, and investors to make choices that could only succeed if home prices continued to appreciate. We had a system under which firms encouraged people to take unwise risks on complicated products, with ruinous results for them and for our financial system.” The difficulty in determining the extent of the crisis, how long it will last and how deep it will get, is outlined by Greenlaw, Hatzius, Kashyap and Shin (2008). To determine the amount of mortgage credit losses, they looked at historical trends of each vintage year and then adjusted the trends for falling home prices. Second, they extrapolated from the current pricing of mortgage-backed securities’ expected losses. Third, they used foreclosure rates from previous regional periods of falling housing prices and applied those rates to the current distribution of mortgages. They estimated losses to be \$400 billion, but also noted the significant uncertainty in their estimates. Hatzius(2008) further estimates that an additional 10% home price decline from mid-2008 levels may result in mortgage credit losses over the years 2007-2012 of \$636 billion, although the uncertainty is high. The latest initiative by the Federal Reserve to buy \$750 billion in mortgage-backed securities brings the total this year to \$1.25 trillion, significantly higher than the Greenlaw estimates.

Since the crisis began, various initiatives have been attempted, with varying results. In December

Table: Indiana and U.S. Foreclosures in the fourth quarter of 2008

	Foreclosure Rate	Loans Serviced	Loans in Foreclosure	Percent of Loans Serviced	Percent of Foreclosed Loans
Indiana					
Prime	2.16%	590,113	12,746	68.6%	40.3%
Subprime	11.90	112,627	13,403	13.1	42.4
FHA	3.98	136,895	5,448	15.9	17.2
All Loans	3.76	860,656	31,597	100.0	100.0
United States					
Prime	1.88	34,977,566	657,578	77.0	43.9
Subprime	13.71	5,302,130	726,922	11.7	48.5
FHA	2.43	3,991,814	97,001	8.8	6.5
All Loans	3.30	45,396,181	1,498,074	100.0	100.0
Source: Mortgage Bankers Association					

Subprime foreclosure inventory rises, starts decline



Source: Mortgage Bankers Association

2007, an initiative by the *Hope Now Alliance* (a consortium of banks established in October 2007 to assist some subprime borrowers) was abandoned because there was no demand for the risky mortgage products they were based on.

FHASecure Program was implemented from January 2008 and designed to help about 240,000 homeowners by allowing families with strong a credit history to refinance their adjustable rate mortgages into conventional fixed rate mortgages due to a reset of their initial easier rates. By August 2008, over 300,000 families had refinanced their mortgages through this program. It was expanded in August 2008 to allow more families to refinance.

The Hope for Homeowners Program, which falls under the Housing and Economic Recovery Act of 2008 was expected to assist over 400,000 homeowners. This program allows borrowers to refinance their current loans into new mortgages insured by the Federal Housing Program (FHA). However, as of late January 2009, only 442 borrowers had been qualified for this program. These low numbers are being attributed to the costs of the program to both the borrower and the lender, additional statutory requirements that add administrat-

-ive complexity, and the current lack of a secondary market for program loans. Newly released guidelines try to eliminate some of these barriers, such as the provision to share with the government, upon closing, any existing equity that a homeowner had in the home.

Making Home Affordable, which falls under the Emergency Economic Stabilization Act of 2008, was established on March 4, 2009 and is expected to assist between 7 and 9 million homeowners. Out of this, a refinance program should assist 4 to 5 million homeowners, with an additional 3 to 4 million benefitting from a loan modification program. Qualifying criteria are still numerous and therefore the program's success rate is yet to be determined. The Federal Reserve's announcement to buy mortgage-backed securities and long-term Treasuries has resulted in the lowest mortgage interest rates in over 50 years. These low rates may provide an incentive for previously unable homeowners to refinance or modify their loans.

As feedback is received regarding the various programs, they may be altered to accommodate more homeowners. Earlier estimates of subprime foreclosures projected a peak in late 2008 or early

2009 because of a reduction in resets on adjustable subprime mortgages. The spike in foreclosures in 2007-2008 was largely associated with resets on mortgages originated in 2005-2006. The problem has declined precipitously since then. Recent positive data suggests that the housing crisis could start improving soon. The Mortgage Bankers Association (MBA) in its February forecast, projects a consistent rise in both homes sales and housing starts from the second quarter of 2009 through 2011. The National Association of Realtors recently announced a rise of 5.1 percent in existing home sales for February 2009, though these sales were still 4.6 percent lower than in February 2008. The U.S. Census Bureau also reported a rise in new home sales by 4.7 percent in February 2009, although still well below February 2008 figures. Initial construction of new homes also rose by 22 percent in February 2009, significantly above expectations but also well below February 2008 figures. The Federal Housing Finance Agency, which regulates Freddie Mac and Fannie Mae, reported a rise of 1.7 percent in national home prices from December 2008 to January 2009, the first rise in a year. Whether these indicators are short-lived is yet to be seen. In the meantime as the recession plays out, the estimated level of toxic assets held by financial institutions may grow, shifting goalposts yet again on the efforts curb the problem.

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